Over the past two decades, a series of reports have projected the impacts of climate change on hydrological cycles in the Canadian Columbia Basin.

- Climate impacts taking place now are presenting as extreme temperature and precipitation, flooding, fire events and peak glacial melt.
- Water quantity, quality (temperature, acidity, turbidity, etc.) and timing of flow are changing streams that are critical for communities and for ecosystem functions.
- Climate change is also impacting lake ecosystems, wetlands, and groundwater aquifers in the region.

Existing water monitoring networks are insufficient to track and understand these changes.

The goal of the Columbia Basin Water Monitoring Framework is to establish a unified monitoring network to support the tracking and understanding of climate impacts on water supply for communities and ecosystems.

Living Lakes Canada acknowledges that this project is taking place in the unceded traditional territories of the Ktunaxa, Lheidli T’enneh, Secwepemc, Sinixt and Syilx Nations who have stewarded these lands for generations. Recognizing Indigenous People as the rightful caretakers of their unceded territories, we work to complement their intergenerational work and Indigenous-led water stewardship initiatives.

Living Lakes Canada led the development of a methodology to establish the required monitoring network, based on selection criteria that reflect local priorities within a scientific water balance approach.

- Watersheds are stratified into groups that tend to respond similarly to climate impacts. A GIS data gap analysis is done to better understand what is already being monitored by government, industry or other stewardship groups, thereby not duplicating monitoring costs or efforts.
- Local priorities for expanded monitoring are identified through consultation with First Nations and the Local Reference Group for each Area of Interest. The reference groups are comprised of Indigenous and non-Indigenous community members; water stewardship groups; industry/commercial water users; and local, regional and provincial governments.
- A Priority Monitoring Matrix is developed to collate the scientific and community water monitoring priorities. The process allows for site selection to meet multiple objectives, resulting in a nested, synergistic and more cost-effective approach to water monitoring. Sites are selected for streamflow; water temperature; groundwater, lake and wetland level; water quality; climate; and CABIN biomonitoring. Data is collected according to relevant standards to ensure that it can be used for analysis, research and decision making.
In 2022, Living Lakes Canada piloted this comprehensive approach to water monitoring in three sub-regions of the Columbia Basin with the goal to scale and expand this model across the entire Basin — and to serve as a template for other regions.

The watershed security and adaptation work being facilitated by Living Lakes Canada in the Canadian Columbia Basin can serve as a paradigm-changing template that can be applied in other regions.

SHIFTING THE PARADIGM OF WATERSHED MANAGEMENT

This comprehensive approach to watershed management will support local and regional efforts to increase climate adaptation options and support the longer term viability of natural ecosystems and ecosystem services.

For example, this project will contribute to:

- water availability studies for community water systems, and
- the conservation and rehabilitation of fish populations by identifying streams that will maintain more consistent flows and temperatures (such as those fed by groundwater) and serve as climate refugia.

Governments at all levels are conducting the cost benefit analysis of maintaining healthy watersheds for watershed security purposes. The Watershed Sector currently contributes $5 billion to B.C.’s GDP and is projected to grow (Working for Watersheds, 2021) as a significant part of the green job sector. Local, community-based water monitoring (CBWM) projects such as the Columbia Basin Water Monitoring Framework are a proactive, progressive and impactful investment for the future and well-being of our communities.

This growing watershed security sector provides meaningful career opportunities for young people and transitioning workers. The work ranges from applying advanced technology to on-the-ground restoration; the development of water resource management; and watershed planning.